GrummanWorld

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Grumman's IFTE Testers Going Into Production

On March 30, Grumman and the Army signed the production contract for the Integrated Family of Test Equipment (IFTE). Electronics Systems Division has been developing IFTE under a development contract for the last three years. IFTE is a computerized tester that can pinpoint problems in any weapon system, and do it in combat zones.

The $58 million production contract calls for 12 of the truck-borne, enclosed IFTE base shop test stations and 13 contact test sets — the hand-held tester that soldiers carry to the damaged weapon system in the field. This first year contract will also cover logistics support and spares. The first of the units are expected to be delivered in September 1990.

This production agreement also contains two option years, which means the Army can choose to buy additional testers. The two option years represent another $75 million in sales for another 26 base shop test station and 40 contact test set units under the contract signed in March.

"The Army expects to buy a total of 335 base shop test station and 2,000 contact test set units," says Program Vice President Don Kump. "In September of this year we expect a blanket order for an additional 50 commercial equivalent equipment units that would be produced over three years."

Grumman expects to sell at least 100 commercial equivalent equipment units, which are used by weapon manufacturers in their factories to develop computer programs called test program sets. Each weapon system needs specific test program sets in order to be tested by IFTE.

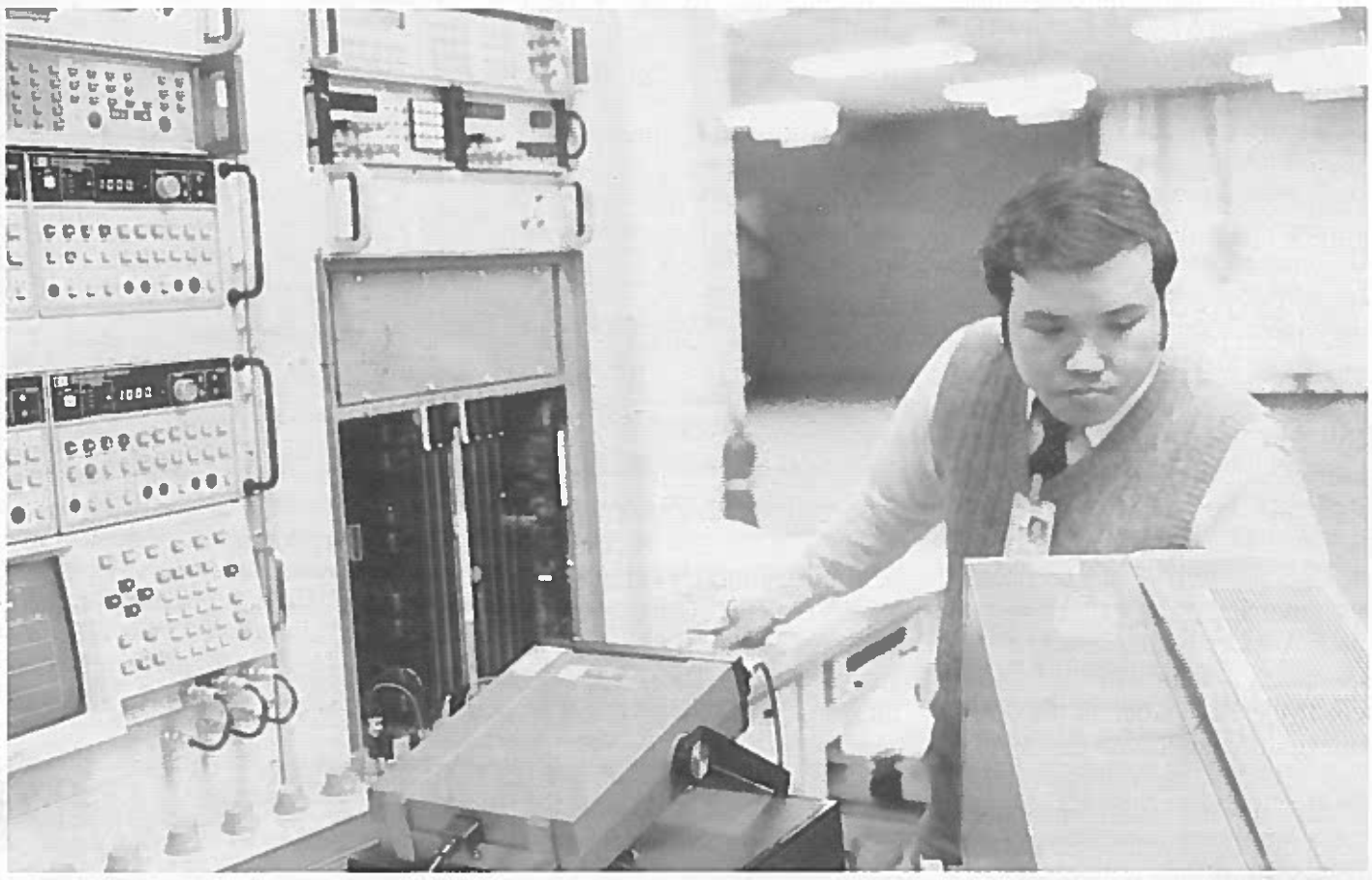
Grummanites in Salisbury, Maryland, will make the cables, while the printed circuit boards will be produced in the Benton Park facility in Pennsylvania. Great River will make the mechanical parts and assemble the IFTE units.

Getting IFTE production off to a good start is the first thing on Kump's mind. "Right now we're getting all the engineering drawing packages together to go to Great River," says Kump. "Our goal is to come up with the best production costs to give the Army even better pricing for future procurements. The more attractive our prices, the more systems we'll sell."

IFTE is going to be the Army's general purpose tester, with 75 advanced weapons targeted as potential users. To date, 23 systems have committed to IFTE and are in the process of developing software for field deployment.

In addition, the door to the international market is opening as IFTE becomes a production reality. "NATO's depot in Luxembourg is looking to buy commercial equivalent equipment units," Kump says, "and this would be beyond the 100 we expect to sell in the United States to weapon systems manufacturers and the Army. The United Arab Emirates will also buy one this year for their Hawk missile system."

Grumman is already at work on the next generation of instrumentation designs for IFTE and it has a new contact test set coming out of development. Called the CTS-II, the new hand-held unit has two main components and one of them — a toughened portable computer system — has found its own market. After a competition, Sikorsky picked it to be the portable maintenance aid for a multirole composite helicopter its team is proposing in an Army competition. If Sikorsky's team wins the Light Helicopter Experimental contract, Test Equipment Products would manufacture the portable maintenance aids.



Working Toward The Next Milestone. *In Melville, L.I., Grumman engineer Kin Hom checks the signals from the IFTE test station . Grumman recently signed a $58 million contract with the U.S. Army to begin production of the Integrated Family of Test Equipment. (Photo by Bob Settles)*

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New Parts-Making System To Be Demonstrated In S.C.

On June 29, Grumman, along with Battelle, Arthur D. Little and Ingersoll Engineering and prime contractor South Carolina Research Authority, will run the first parts-making demonstration of the Rapid Acquisition of Manufactured Parts (RAMP) program for the Navy.

RAMP will revolutionize the way spare parts are produced and delivered. Its purpose is to cut the time it takes to deliver a part from nearly a year to an average of 30 days. The system initially being developed is for the production of small machined parts and printed wiring assemblies. Grumman Data Systems is responsible for software development and integration.

During the June demonstration, an operator will sit at a computer terminal and order a machined part. A specially designed computer system will electronically gather all the design information about the part and generate the plan to make the part. Using artificial intelligence, the computers will create the shop floor routing, and numerical control codes for the cutting tools will be loaded into the two automated machines. From that point on, it will be up to the cutting tools to do their work.

"Most of the major software system computers and commercial, off-the-shelf software packages are in place. We started system integration on April 4," says Jim Austin, Data Systems' RAMP program director.

"The computer architecture that has been developed here can control almost any manufacturing process. The goal is to have contractors electronically receive a Product Data Exchange Specification (PDES) file — an electronic blueprint of the part — from the Navy and come back with bids and delivery dates within 72 hours," says Austin. "Now, the Navy puts out a request for proposal and everybody has 60 days to look at it."

The five-year RAMP project started in 1986. There are now 105 people on the project; 41 are Grummanites. By March 1991, they plan to completely automate the manufacturing cell they now have.

Austin says that the Data Systems team has a contract to develop a PDES file generating facility for small machined parts in Louisville, Kentucky, and another facility for printed wiring assemblies in Crane, Indiana.

He says the RAMP team is now working toward a contract to set up a small machining cell in the Cherry Point Marine Air Station in North Carolina. Austin says, "We are also working to get additional funding to develop PDES files for engine blade repair systems, and the Trident submarine bases are also interested in our work."

Parting Shot. *At Aircraft Systems' Houston Operations in Texas, Daniel Johnson installs fasteners using a Drivematics machine. This automated method is three to five times faster than working by hand. Johnson is working on an F-14 overwing fairing.*

V-22 Makes A Successful First Flight

On March 19, the Bell-Boeing V-22 Osprey made a successful first flight at Bell's Arlington, Texas, facility. The aircraft flew for 15 minutes in the helicopter mode with its engine nacelles vertical and included rolling takeoffs and landings

"We received reports that said the aircraft performed flawlessly," says Bill Brown, director of the V-22 Program at Grumman.

The 20-ton V-22 is a tiltrotor aircraft that combines the forward efficiencies and flight characteristics of a turboprop aircraft with the vertical take-off and landing capabilities of a conventional helicopter.

Grumman designed and built the empennage or tail section of the plane.

"We were all impressed with the stability of the plane, especially while it hovered," said Brown. "The V-22 handled better than anyone initially expected."

Under a full scale development contract with Boeing Helicopter, Grumman has delivered nine of the tail sections.

Most of the plane, including the empennage, is made of graphite composites. Aircraft Systems' Aerostructures unit designed the tail structure at its Melville facility on Long Island. The parts were fabricated in Milledgeville, Georgia, and assembled in Stuart, Florida.

Grumman has submitted a proposal to build an additional 12 tail sections. That contract would be worth over $30 million.

The decision is expected to be made by the end of April. Proposals for 129 and 140 empennages have also been submitted. Delivery of those parts would be between 1991 and 1994.

The Osprey is designed to carry 10,000 pounds of cargo or 24 combat equipped Marines. The planes are expected to increase the speed and over-the-horizon distance from which the Marines can mount an attack.

The Navy and Air Force will also receive the V-22. Initial quantities are expected to be over 650 aircraft.

Super Liftoff. *Bell-Boeing's V-22 Osprey recently made its first flight at Bell's Arlington, Texas, facility. Grumman designed and built the empennage or tail section of the plane.*

Unit Values

The Grumman Employee Investment Plan's unit values as of February 28, 1989, compared to January 31, 1989, are:

Equity Fund
4.797 down from 4.910

Fixed Income Fund
6.374 down from 6.410

Guaranteed Income Fund
3.007 up from 2.984

Company Stock Fund
$20.19 up from 20.18

Even More Important. *The cogeneration plant (above) being built in the Bethpage complex comes at an opportune time, now that the closing of the Shoreham nuclear plant is likely. However, the electric rate savings from the new plant are tied to the LILCO rate. The Shoreham closing settlement will give LILCO an approximately five percent annual rate increase for the next 10 years.*

Grumman To New York State: Don't Dismantle Shoreham

BETHPAGE, New York, April 6 — "All of us are going to pay for Shoreham three times — once to build it, once to tear it down, and once to replace it," says Grumman Chairman John O'Brien.

O'Brien has been outspoken in his opposition to the plan to shut down the $5.5 billion Shoreham nuclear power plant — which was approved yesterday by the New York Public Service Commission. The settlement includes five percent annual rate hikes for 10 years by Long Island Lighting Company (LILCO).

O'Brien points out that higher electric rates would hurt the company when it competes for contracts, and would affect thousands of Grumman suppliers on Long Island. "All of us who pay the bills on Long Island ought to raise hell with our elected officials, because they let us down," he says.

At the March 31 service pin meeting, O'Brien noted that the Indian Point plant in Westchester County has been called one of the most efficient power plants by the New York Power Authority. He also noted that LILCO operates at 98 percent efficiency during the summer peak period.

The PSC approval is one of several needed to implement the settlement. Under its terms, LILCO agrees not to operate Shoreham even if it gets a federal license to do so.

The pact seeks to close Shoreham as well as return LILCO to financial solvency. If it obtains all necessary approvals, LILCO will pay $1 per common share beginning later this year. The pact was signed February 28 by New York Governor Mario Cuomo and LILCO officials, but the PSC still has to set the rates.

The PSC began its hearings on the settlement in mid-March. Both supporters and critics of nuclear power criticized the settlement due to its high cost to ratepayers.

On March 22, Grumman submitted testimony to the PSC outlining its position on the settlement. Grumman said at least $1 billion of the burden of future rate increases should be shifted from the ratepayers to LILCO shareholders. Grumman also said the Shoreham plant should be mothballed rather than dismantled. It could be recommissioned if needed to meet future energy requirements on Long Island.

"It is Grumman's position that holders of LILCO common stock should not get a windfall here," read Grumman's testimony. "Many of the present holders of LILCO common stock invested in LILCO during the period when its future financial stability was clearly known to be at risk... [They] clearly understood the risk of their investment and should not be relieved of the costs associated with that risk, to the detriment of the ratepayers."

Grumman also called for: eliminating a provision in the agreement that permits LILCO to withdraw from it or to seek further rate increases if it is unable to achieve an investment grade rating; and a mechanism to ensure LILCO will not recover from ratepayers any of the amounts it will be obligated to refund to them under a proposed $390 million racketeering settlement. This is the agreement in the lawsuit brought against LILCO by ratepayers; it must be approved by the District Court.

The Long Island Association (LIA), the area's chamber of commerce, called on the PSC to defer ruling on the rate increases until the Nuclear Regulatory Commission decides to grant Shoreham an operating license. The state consumer protection board has called for a two-year delay in LILCO stock dividends.

The LIA also wants a public referendum on Shoreham. It recently polled its members and found them overwhelmingly opposed to the deal. Seventy-two percent of 340 Long Island executives responding to the poll were against the pact.

The New York and Long Island Power Authorities, as well as LILCO shareholders, still have to approve the settlement. LILCO's annual meeting is scheduled for June 15. Despite some support for opening Shoreham, shareholders are expected to vote for the deal because it involves less financial risk.

The company's board must then ratify it. It is not expected to act until the PSC approves the rate plan. This would enable LILCO to back out of the deal and operate Shoreham if the plan is not to its liking.

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Got The Wrong Number?

If you call Aircraft Systems' St. Augustine facility, take note of its new phone number. As of Monday, April 10, this Florida site will put a new, direct-dial telephone system into operation. The main switchboard number is now: (305) 825-3300.

Appointments

The following Grummanites recently received new assignment in the following divisions:

Aircraft Systems

Bethpage Operations: Dennis Doney, section head, Technical Services; Eugene Earley, section head, Technical Services; Michael Carroll, foreman, Tool Fabrication and Equipment Deployment.

Integrated Logistics Support: Nancy Chen Baldwin, program manager, F-8 Peace Pearl Program; Joseph Graviano, assistant program manager, S-2T Retrofit/Kit.

Technical Operations: Peter Georgopoulos, team leader, Canadair A-340 Fuselage Program; Tom Campbell, technical Specialist, ECCM Radar Waveforms.

Corporate Services

Administrative Services: Martin K. Makboulian, assistant manager, Records and Systems Management.

Procurement: Ronald L. Thuma, director, Policy and Systems.

Data Systems

Systems Support: George Drivas, director, Planning and Resources.

Grumman Corporation

Corporate Procurement: Kathleen M. Prokop, Competition Advocate.

Melbourne Systems

Strategic Planning: Ronald Rabin, director.

Medical Advances Increase Need For Blood Donations

Last September, Mt. Sinai Hospital in New York City performed its first liver transplant. The patient was Howard Henry, a 20-year-old man from Amityville, Long Island.

Henry received 285 pints of blood during the delicate 12-hour operation — which can require as many as 500 pints. Eight other New York-area hospitals have since announced plans to begin performing liver transplants, which previously were only done in the U.S. at the University of Pittsburgh Medical Center.

In these days of astonishing medical advances, there is still no substitute for blood. It can only be produced by the human body, and sick people depend on the generosity of blood donors.

Phil Gill, 1989 Blood Program director, expects the demand for blood on Long Island to go up even more because its hospitals are becoming better known nationally. The Long Island Jewish/Hillside Medical Center recently reported a 2 percent risk of death from open heart surgery. That is expected to dramatically increase the number of such procedures there.

"A low risk factor increases the number of people who come into this area for major operations," explains Gill, who had open heart surgery himself in 1974. "At that time, the lowest risk factor at a Long Island hospital was 16 percent. I had my operation at a hospital in Houston, where the rate was 8 percent."

The University Hospital at Stony Brook is becoming nationally known as a major burn center. Burn units require long-term hospital stays and enormous quantities of blood.

Keeping these and the 40 other Long Island hospitals supplied is a weighty challenge. The common term "blood bank" is a misnomer, since it connotes a reserve of blood.

"People need to realize that there's no such thing anymore," says team member Mary Scioscia, an accountant for Electronics Systems. "On Long Island, the Long Island Blood Services supplies all the area hospitals with approximately 700 pints a day. There's never a surplus."

The goal set for each blood drive is a crucial number. "We give Long Island Blood Services an estimate five days in advance of the amount of blood we should collect," says Scioscia. "That way, it can properly staff the drive. More important, it advises area hospitals on the amount of blood they can expect. Hospitals rely on this information to plan elective surgery."

The team is trying a few new tactics to increase participation at Grumman blood drives. Freelance adman Ray Adell is now making an "About Long Island" radio spot highlighting the Grumman Blood Program and the need for donations. The team sent out 2,600 letters to people with type "O" blood to plug a special drive it had recently in Headquarters.

"We got 134 on a bad weather day," says Gill. "The majority were from other plants. That shows dedication."

At leased buildings such as 9 in Melville and 237 in Woodbury, team members visit the other building tenants to let them know that they can donate, too.

"We're also asking the departmental United Way reps to help bolster our network of blood drive captains," adds Scioscia.

Among large Grumman facilities, Calverton has the best per capita participation. Last year, Grummanites there donated over 2,000 pints of blood — about one-fifth the Blood Program's total for the year. Other outstanding drives have taken place in Buildings 235 (Holtsville), 3, 30, 35, 106, 237, and 43/44 (Great River).

"We're getting more first-timers this year," says Gill. "But there's plenty of room for improvement. Grumman's participation rate is 49 percent, based on the number of pints collected and the number of Grumman employees on Long Island. The Metropolitan Life office in Hauppauge has 92 percent participation.

"Most Grummanites who give come to a blood drive only once a year," says Gill. "If they gave twice, Long Island Blood Services would have 10,000 more pints of blood for area hospitals."

The calendar shows when the blood program will visit your building. If the time or place aren't convenient, you may go to another building's drive. You'll no longer have to lay down on a gurney bed: Long Island Blood Services now uses folding deck chairs.

If you can't make it to a drive inside the gate, go to Long Island Blood Services, 155 Duryea Road, Melville, Long Island (just east of Route 110). Be sure to give the person on duty the Grumman account number (3863) so your donation is included in Grumman's tally.

If you work off Long Island, the need for your donation is no less acute. Contact your personnel administrator for information on when a drive will be held in your building. Or, look up your local blood service in the Yellow Pages.

For further information, call the Blood Program office at (516) 575-8920.

Survivors. *Once risky, open heart surgery has become commonplace. Grummanites Phil Gill and Bud Mitzman both had open heart surgery — Gill in 1974 and Mitzman, last year. They are now working on this year's Grumman Blood Program. (Photo by Bob Settles)*

Give The Gift Of Life

Date	Place	Time
April 17, 18	Bldg. 5	9 a.m. - 2:30 p.m.
April 19	Bldg. 15	9 a.m. - 2:30 p.m.
April 25	Bldg. 237	9 a.m. - 2:30 p.m.
April 26	Bldg. 9	9 a.m. - 2:30 p.m.
May 9	Bldg. 106	9 a.m. - 2:30 p.m.
May 11	Bldg. 12	9 a.m. - 2:30 p.m.

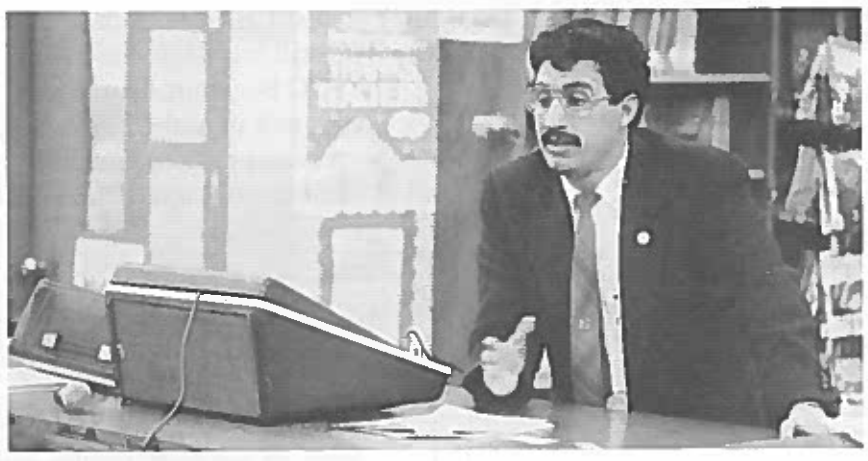
Someone To Look Up To

As part of Grumman's Partners In Education program, systems engineer Joaquin Carvajal often speaks to students at Westbury Junior High School on Long Island. Each month three students, representing grades 7, 8 and 9, are presented with the Citizenship Award sponsored by Grumman. The winner receives a pen and pencil set.

Carvajal, originally from the Dominican Republic, came to the United States in 1975. He is the founder of the Society of Dominican Engineers. Also as part of the partners program, Carvajal spends Saturday mornings with students at George Washington High School in Manhattan. Carvajal teaches computer classes, math and English as a second language, primarily to Hispanic students.

"Many times these students fall behind in their classes because they cannot understand the language," says Carvajal.

Carvajal is also concerned with making the students aware of all opportunities available to them. "Role models are very important to these students," says Carvajal. "I help them identify what they want to do with their lives and suggest ways for them to reach their goals."



He Cares About Their Future. *Systems Engineer Joaquin Carvajal speaks with students at Westbury Junior High School on Long Island. Westbury is one of 15 schools involved in Grumman's Partners In Education Program. (photo by Rich Breunig)*

GQ Project Lets Grummanites Share In The Savings

A Team Effort. *Construction crew members include: (from L to R) Phil Avello, Ed Anderson, Charlie Cox, Joe Orenzo, Kenny Simco, Pete Wagenhauser, Dick Reichel, Bob Jasinkonis, and Tom Theisen.*

"This is a great way to show off our talents," says Charles Cox, a Grumman painter.

Cox is part of a group of Grummanites working on a pilot project that could put cash in their pockets for working smarter and getting the job done quicker.

If the renovation of the old Credit Union in Bethpage is completed ahead of schedule and under the estimated cost, 36 Grummanites working on the project will split 50 percent of the savings.

This incentive project stemmed from a Grumman Quality (GQ) action team in Business Operations working on the process of rewards and penalties. The team's preliminary findings were that most people want to help solve the company's problems. Plus, they'd like to share in the rewards when the solutions are successful.

The department's GQ steering committee suggested that the renovation of the Credit Union would be a perfect test case to implement the new approach to sharing company success.

"The renovation cost estimates were frustratingly high," says Jake Bussolini, vice president, Business Operations. "We were convinced it could be done for less.

"We decided to throw the problem to Grumman's construction crews. We told them that if they could figure out a better way to get the job done and bring it in under the lowest estimated cost, they could share in the savings in cold hard cash," said Bussolini. "However, we also told them that there would be no penalty if they didn't beat the target cost."

Less than two weeks later, the crew was randomly chosen from Facilities' Construction Trade Services — part of Business Operations. Members include painters, laborers, plumbers, electricians, carpenters, and tinsmiths (specialists in duct work).

The building will be the new home for Grumman Security and for The Travelers Insurance representatives. Renovation began March 20 and is scheduled to be completed by July 7. On March 30, the crew was already two weeks ahead of schedule. The demolition work is getting done a lot quicker than anticipated.

"The key is planning and teamwork," says Artie Hall, construction manager.

Hall is using a computer program called Project II to organize the project on his Macintosh computer. Each task required for the job is entered into the program with its required hours and cost. The tasks are organized starting with jobs that need to be completed before another can begin. "For example, it's a waste of time to have the spackler on site before the sheet rock is installed," explains Hall.

The computer keeps track of how many hours are being spent on each task. As jobs are completed ahead of time, the computer automatically calculates how much money was saved and pushes up the completion date of the renovation. The speedy demolition has saved about $1,100 so far.

The computer also stores the amount of time each crew member spends on the job. The incentive money will be split on a percentage basis. The more time spent, the more money received.

As manager, Hall is required to be there all the time. He chose not to share in the savings for this reason.

A graph titled, "The Red Dog Express," is kept up on the wall in a trailer outside the building. The 'Red Dog' name comes from football jargon describing a team blitz on the quarterback.

A green line on the graph plots the estimated time and cost of the job. A red line shows the actual. "The guys like to come in every once in a while to check on their progress," says Hall.

Some of the craftsmen on the job say that despite the cash reward, they like to think they work this hard all the time. Ed Anderson has been a carpenter at Grumman for 10 years. "Getting the extra cash is certainly a bonus," he says, "but without sounding like I'm bragging, I think we do great work. Most of us have internal incentive."

As Phil Avello tears up the old floor tiles, he says, "There are some people who put in a full day's work and do their best all the time. Then there are others who, no matter what you offer them in incentive, will still slack off. Fortunately, there's no one like that on this job."

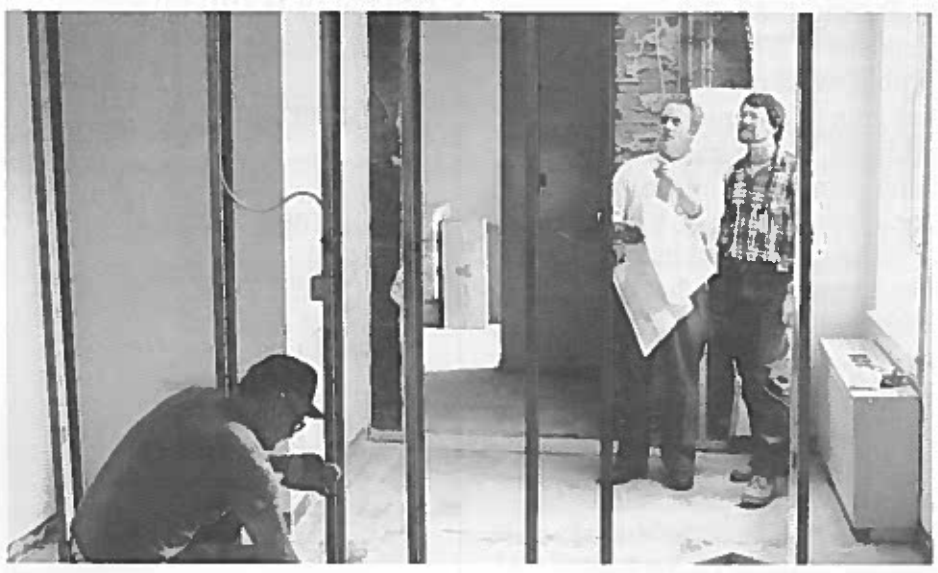
The quality of this job will not be compromised for speed. Hall reviews the work every day, and checks it out three times a week with the project engineer.

"It doesn't pay to take short cuts on a program like this. It takes a lot longer to tear something down and put it up again than it does to do it right the first time," says Hall. "Besides, these people are too proud of their work not to do it perfectly every time."

Hall says he's not sure how much money the crew will save. "But what we learned by concentrating on doing things better in less time is immeasurable," he says.

"This incentive project will help prove a basic premise of Grumman's Quality program," says Bussolini. "Doing the right things in the right way is the best way for the company's future."

Grumman World will check in with the crew each month for an update on their progress.



They Can Do It. *If the renovation of the old Credit Union is completed under the the estimated cost, these Grummanites will share in the savings. Members shown here are: (above, L to R) Dick Reichel, Artie Hall (who will not share in the savings), and Pete Wagenhauser; (photos at right, L to R) Bob Jasinkonis, Kenny Simco, and Charlie Cox. (All photos by Rich Breunig)*

In '89, EIP Could Hit $1 Billion-Plus Mark

"A year ago, the total value of the Grumman Employee Investment Plan was about $750 million. We've added about $150 million in the last year and if it keeps going at that rate, next year we'll be looking at a fund in excess of $1 billion," said Bob Bradshaw, Grumman vice president and secretary, at the 14th annual meeting of the Grumman Employee Investment Plan last month.

Of the $914 million in the EIP as of December 1988, $508 million or 55.6 percent was invested in the guaranteed income fund. The second largest segment was company stock at $262 million. Grumman contributions to this fund via company match account for about $217 million; PAYSOP for $14 million and employee contributions for $31 million. There were smaller percentages for the fixed income fund (six percent or $55 million) and the equity fund (9.7 percent or $89 million).

The EIP fixed income fund performance was below market average in 1988 for the second consecutive year. "Fiduciary is a traditional mid-term bond manger, and that sector had the poorest rates of return during the year," said Rick Potter, senior vice president of Fiduciary Trust International. "However, our long-term track record is still excellent."

Potter explained that if you invested a dollar in the Grumman fund 10 years ago, that dollar at the end of 1988 would be worth three dollars. This 11.6 percent annual compounded rate of return is better than the 11.1 percent for the bond market as a whole.

The bulk of the assets are in bonds with 10 years or less in maturity. "Facing potential problems in the economy, we want to have a portfolio that is structured with the highest degree of liquidity and also the highest quality," Potter said. "During periods of poor economic growth, companies can have problems with their financial structure and can be down-graded."

Over 60 percent of the portfolio is invested in Treasuries, agencies and money market instruments — generally considered the most liquid items within the bond market. In addition, Fiduciary has three-quarters of its portfolio invested in the highest quality issues — triple A or better — and over 90 percent of the portfolio in double A or better.

"1988 was a time of major mergers and leveraged buyouts," said Potter. "While equity people love these types of situations, the bond people absolutely abhor them — because a very high rate security goes to below investment grade overnight and loses a large portion of its market value. We try to avoid industrial issues for that reason — they account for only six percent of the portfolio."

He predicts that rates will start to decline in the second half of 1989 and most likely finish at lower levels than they did in 1988.

The performance of the EIP equity fund is compared to the S&P 500, the Dow Jones industrial average and the SEI median. "In 1988, the fund's managers — First Manhattan Capital Management — did reasonably well, winding up in about the 25th percentile against their peers," said Bradshaw.

The equity market continues to be volatile, said Bob Howitt, a partner at First Manhattan Capital Management. "We spend virtually no time attempting to predict the stock market nor predicting specific economic events or interest rates," he said. "We concentrate on what a business will earn. This type of assessment of earning power is the same process that corporate acquirers go through. It's one of the reasons that somebody like Phillip Morris was willing to pay a high price for Kraft, which was a holding in the portfolio last year." The current top 15 holdings are listed on this page.

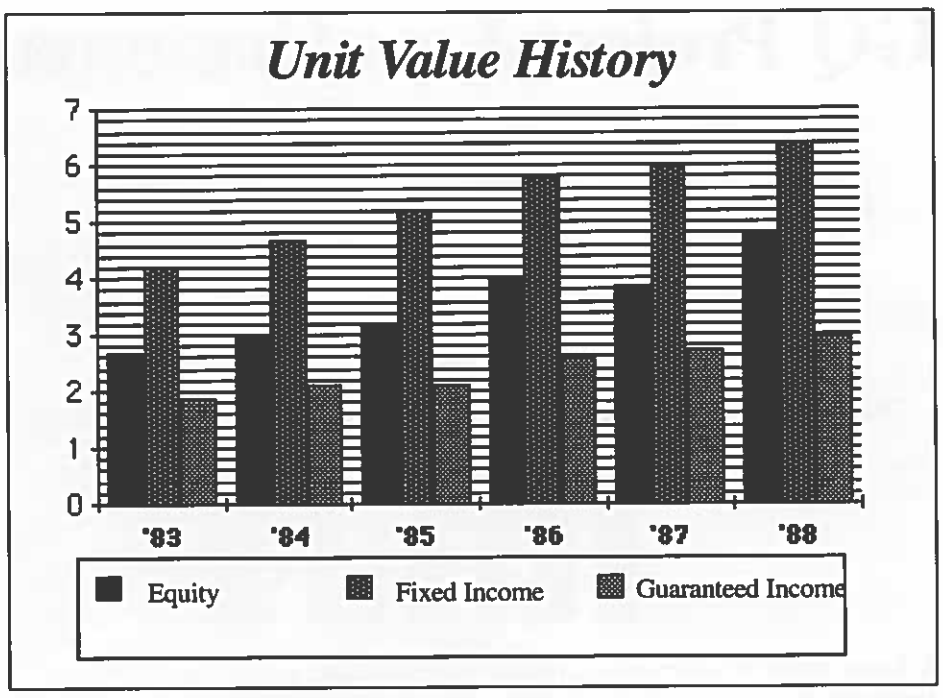
Today, the guaranteed income fund has over a half billion dollars in assets. "Last year, we managed to sustain a guaranteed rate of 10 3/4 percent for both the first and last half," reported Bradshaw. "This year, the guaranteed rate is 10.25 percent for the first six months. In June, the rate for the second half of 1989 will be announced."

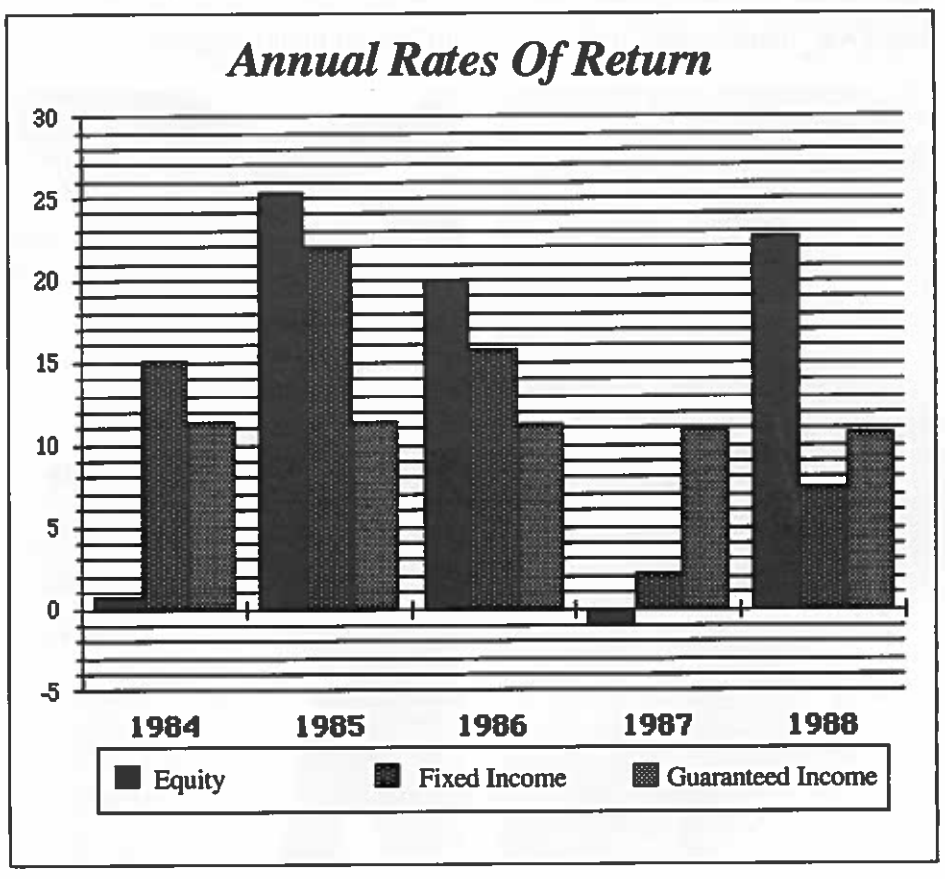
During 1988, there were deposits of $74 million, withdrawals of $25 million for a net gain of $49 million. In addition, the guaranteed income fund earned $46 million in interest for a total growth of $957 million.

"The guaranteed income fund has become somewhat complex with each passing year as we try to manage it more assertively," said Bradshaw.

This Grumman EIP fund now has contracts with nine organizations: Aetna, Citibank N.A., Massachusetts Mutual, Mutual Benefit, Home Life, Principal, Provident, State Mutual and Washington Mutual Savings Bank.

A booklet outlining the plan's performance in 1988 will be available later this month. You can get yours by writing to EIP office, C15-GHQ.





EIP Closes At 4 p.m. On Last Day Of Month

The Grumman Employee Investment Plan office in Headquarters will be closed at 4 p.m. on the last work day of each month, starting April 28. This is necessary to conform with the closing time of the securities markets in New York. Transfers, withdrawals and other transactions in the EIP are effective on the last business day of the month.

From Magazines To Cupcakes

The 15 largest holdings in the Employee Investment Plan's equity fund portfolio (they account for about 43 percent of portfolio) are:

Time
American Express
NCR
Dow Chemical
General Electric
Tandy
Westinghouse
Warner Communications
Capital Cities
Super Value Stores
Bristol Myers
Pitney Bowes
Gannett
Melville Corp.
Sara Lee

Annual Grumman Shareholders' Meeting
Thursday, April 20
2 p.m., Building 4 hangar, Bethpage

Scholars Are The Tops In The Class Of '89

The winners of the 1989 Grumman Science and Engineering Scholarships have been picked. Six of the 12 scholarship winners and six of the 12 finalists are children of Grumman employees. All but two of the scholars are from Long Island; one of the dependent winners hails from Salem, Virginia, and the other from Plainsboro, New Jersey.

The dependent scholars are: Stephen Abseck, William Hayslett, Mark Hemmerdinger, Jeffrey Mendelsohn, Erik Nielsen and Timothy Ueng. The non-dependent scholarship winners are: Russell Grandinetti, Peter Laz Jr., Susan Meirs, Fernando Miguel, Gregg Paradise and Russell Singer.

These 12 each receive $6,000 per year for college, plus summer employment and a guaranteed job offer at Grumman after graduation.

Dependents Darlene Colasuonno, James Hewitt, Andrew Manning, Christine McCarthy, Eric Olsen and Roy Wang and non-dependents Keith Bernhardt, Joe Chan, Reyes Cortés, Michael Craigen, Brian Iudica and Roy Williams were this year's finalists. They will each receive $1,000 a year for four years, as well as summer employment. In case a full-scholarship student should drop out of the program, a finalist will receive the remainder of the scholarship money.

Beginning with the dependent scholars, here is a closer look at the 1989 Grumman Science and Engineering Scholarship winners and finalists:

Stephen Abseck is the son of Byron Abseck, a senior engineer in Aircraft Systems. Stephen will be West Babylon (L.I.) High School's valedictorian. He plans to go to Princeton to study electrical engineering. "There is an obvious respect for his intelligence and a respect for his opinions and judgments," said his math teacher. "He was and is a class leader."

Stephen served as class president in his first three years at the school and is currently student body president. In addition, he has won a number of student awards and is active in many organizations both at school and in his community.

William Hayslett is the son of Samuel Hayslett, a department supervisor for Grumman Emergency Products in Roanoke, Virginia. William plans to major in mechanical and aeronautical engineering at the Virginia Military Institute. "I love engineering," he wrote on his scholarship application. "I like to take things apart and see what makes them work."

He is a member of the National Honor Society, and Glenvar High School's Spanish and Key clubs. He was on several academic and athletic teams. Last November, William and two other students began teaching a night class in word processing for adults.

Mark Hemmerdinger is the son of Louis Hemmerdinger, a corporate advisor for Grumman Corporation in Bethpage. Mark plans to study engineering at Stanford University. "What impresses me most, however, about Mark is his sensitivity. He listens sympathetically and patiently to the concerns and problems of his classmates and members of the community alike," said a teacher at John F. Kennedy High School, Plainview, L.I. Mark tutored in math and science and served as undersecretary general of the school's metropolitan model United Nations Club. He participated in the Math Olympiad and is a member of the National Honor Society and editor of the newspaper. He also played on the varsity baseball and basketball teams.

Jeffrey Mendelsohn is the son of Stanley Mendelsohn, who is a group technical specialist for Space Systems in Plainsboro, New Jersey. This Eagle Scout plans to major in physics at Princeton. "The study of physics would be a natural continuation of my interest in the processes that govern the real world," he wrote on his scholarship application.

At West Windsor-Plainsboro High School he was on the cross country and volleyball teams, founded the chess club and participates in several other clubs. In 1988, he was on the national championship team in the American Computer Science League all-star competition. Jeffrey also worked at the Jewish Community Center in Ewing, New Jersey, as a counselor.

Erik Nielsen is the son of Robert Nielsen, the director of Automatic Test Equipment development in Electronics Systems. Erik hopes to earn a mechanical engineering degree from Rice University. He's already put his interest in engineering to practical use: he and some classmates designed a device that lets their physics teacher place his boat on top of his car without hurting his back. He is vice president of Students Against Drunk Driving at Sachem High School North, Lake Ronkonkoma, L.I. Erik is a member of the National Honor Society and has won a number of academic awards at Sachem North.

Timothy Ueng is the son of Jer Shong Ueng, who is an assembler/riveter in Aircraft Systems. Timothy caps four years at John Glenn High School in East Northport as valedictorian. "I believe that Tim's intellectual ability, maturity, motivation, work ethic, study skills and obvious interest in the field of mathematics and science make him the perfect candidate for a career in science or engineering," said one of his chemistry teachers. He hopes to become an electrical or computer engineer at Yale.

Timothy had a summer internship in chemistry at Johns Hopkins University and was a participant in the Adelphi University Science Seminar Program for Gifted Students and the Columbia University Science Honors Program. He was also on the junior varsity wrestling team and is a violinist in the school orchestra. Last summer he did volunteer work at St. John's Hospital. He is treasurer of the youth group at Winfield Reformed Church.

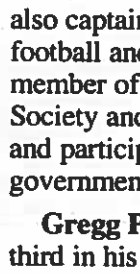
Here are the six non-dependent scholars:

Russell Grandinetti of Bayport will be the salutatorian of St. Anthony's High School, Kings Park, L.I., graduating class. He plans to study electrical engineering at Princeton. He won the Long Island Forum for Technology award for outstanding achievement in mathematics, science and technology, the Bausch and Lomb science award and the Princeton Book Award. Russell participated in the Brookhaven National Laboratory bridge-building contest. He is a member of the National Honor Society and is a National Merit Scholarship semifinalist. He plays saxophone in St. Anthony's jazz band and is president of the History and Government Club. He is also active in his parish youth group.

Peter Laz Jr. of Wading River, Long Island, plans to study engineering at Duke University. His grandfather was a Grumman engineer. "The day I was born, July 26, 1971, marked the liftoff of Apollo 15," he wrote in his application. "Perhaps it is my destiny to become an engineer?"

Peter won the Shoreham-Wading River High School underclassman computer science award and took third place in the Long Island Math Fair, the American High School math exam and the Suffolk County math exam. He is involved in student government and plays on the golf and tennis teams. He is also an Eagle Scout.

Susan Meirs of Commack, Long Island, hopes to go to Brown University to study electrical engineering. She is National Honor Society treasurer at Commack High School, where she is also a member of the student council, the class executive boards, the yearbook committee and Students Against Drunk Driving.



"Even though Susan is sixth in her class of 300 students, one constantly has the feeling that she possesses perpetual energy to learn," said her guidance counselor. In the Suffolk County Math Exam, Susan took a third place prize, an honorable mention in the National Spanish Exam and a blue ribbon at the Long Island Congress Science Fair.

Fernando Miguel would like to study engineering at the United States Military Academy at West Point after he graduates from Comsewogue High School, Terryville, L.I. Fernando worked on Representative George Hockbrueckner's congressional campaigns. He tutors fellow students in math and belongs to a rock band. He's won high average awards for courses in calculus, earth science and English. Fernando was also captain of his high school football and lacrosse teams. He is a member of the National Honor Society and Amnesty International and participates in student government.

Gregg Paradise will graduate third in his class at Sanford Calhoun High School in Merrick, L.I., and then plans to study engineering or computer science at Princeton. He is editor of the school newspaper and works on the yearbook. He is a member of the debating team, the Peer Leadership Program and the Drama club. Gregg also played varsity soccer and bowling and junior varsity baseball. He placed third internationally in the University of Wisconsin computer contest and finished first in Nassau County and sixth in the state in the Olympics of the Mind competition. He won the Rensselaer Polytechnic Institute Medal for the highest math/science average in the school.

Russell Singer will be valedictorian of his class at Bethpage High School, L.I. After graduation, he plans to head for Columbia University to study computer or electrical engineering. He helped rewrite his school's constitution and is active in student government, the school newspaper, a number of clubs, and was president of the Principal's Cabinet of the student council. Russell also played varsity tennis and junior varsity soccer. His guidance counselor said, "He is one of those gifted people who has exceptional ability and uses it wisely."

The six dependent finalists are:

Darlene Colasuonno, who is the daughter of Thomas Colasuonno,

(Continued on page 8)

Top Students Named '89 Grumman Scholars

(Continued from page 7)

an assistant director in Data Systems. Darlene will graduate

from General Douglas MacArthur High School in Levittown, New York, and hopes to study computer science or electrical engineering at Cornell.

James Hewitt is the son of

James Hewitt, a procurement manager in Aircraft Systems. He will be the valedictorian of his graduating class at Long Island Lutheran High School, Brookville.

Obituaries

Camille M. Carr of Graphic Systems, Bethpage, Data Systems Division, died March 21 at the age of 50. She had been with the company since 1984 and resided at 142 Scott Ave., Deer Park, N.Y.

Gene R. Losee of Maintenance, Calverton, Corporate Services Division, died March 27 at the age of 64. He had been with the company since 1954 and resided at 22 Brown St., Riverhead, N.Y.

Carmela Raimondi of Operations, Great River, Electronics Systems, died March 25 at the age of 59. She had been with the company since 1979 and resided at 544 Hempstead Blvd., Uniondale, N.Y.

Eugene J. Tuttle of Production Control/Parts Control, Hicksville, Aircraft Systems, died March 18 at the age of 47. He had been with the company since 1969 and resided at 572 Bayport Ave., Bayport, N.Y.

Raymond W. Whelan of F-14 Modification Avionic Buildup, Calverton, died March 15 at the age of 54. He had been with the company since 1966 and resided at 29 Montauk St., Selden, N.Y.

His goal is to study aerospace/ aeronautical engineering at Harvey Mudd College.

Andrew Manning is the son of John Manning, a director in Data

Systems. Andrew plans to study applied mathematics at Princeton after he graduates from St. Anthony's High School.

Christine McCarthy, who is the daughter of Amza McCarthy, a

foreman in Aircraft Systems, will graduate from Walt Whitman High School in Huntington Station, Long Island. She plans to study computer science at Rensselaer Polytechnic Institute.

Eric Olsen is the son of Rolf Olsen, a technical writer in

Aircraft Systems. Eric will graduate from Farmingdale High School on Long Island and hopes to go to Cooper Union to study computer engineering.

Roy Wang is the son of Tung Wang, a senior systems

programmer in Data Systems. Roy wants to study applied mathematics and computer science at Carnegie-Mellon University after he graduates from Miller Place (L.I.) High School.

The non-dependent finalists are: **Keith Bernhardt,** of Connetquot High in Bohemia; **Joe Chan**, of Bethpage High; **Reyes Cortés**, of North Babylon High; **Michael Craigen** of Smithtown High East in St. James; **Brian Iudica** of North Babylon Senior High; and **Roy Williams** of Freeport High.

Readership Survey

We don't want to do all the talking. We'd like to know what you think about the things you see in these pages. Your comments, suggestions and complaints are welcomed.

Article	Great	Good	Poor	Didn't Read
IFTE Contract (P. 1)	[ ]	[ ]	[ ]	[ ]
LILCO Settlement (P. 3)	[ ]	[ ]	[ ]	[ ]
GQ (P. 5)	[ ]	[ ]	[ ]	[ ]
EIP (P. 6)	[ ]	[ ]	[ ]	[ ]

Suggestions for Future Articles:.....
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Comments About This Issue:.....
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Name.....
Ext.....(Required If You Wish A Reply)
Division..... [ ] I am a retiree

Mail to: Grumman World, A22-GHQ
1111 Stewart Ave., Bethpage, N.Y. 11714

Visual Aid. *Greg Nealey has been using this magnification system called Vantage since October. It helps him read ops sheets, blue prints, and other paperwork associated with his job in Teardown at St. Augustine, Florida.*

New Machine Helps The Vision Impaired See

ST. AUGUSTINE, Fla. — A high-tech magnification device is helping a vision-impaired employee do his job, and has brightened his career outlook.

Greg Nealey works in Teardown at the Aircraft Systems plant here — he helps take apart planes undergoing modifications. With 20/200 eyesight and tunnel vision, he is legally blind. Greg has no problem operating equipment, but until recently, he did have difficulty reading the paperwork: documents, operations sheets, parts tags, his timecard.

"Co-workers helped me out, but I wanted to be able to work independently," says Greg. He learned about Vantage, a combination closed-circuit TV and magnification device.With it, any printed material can be enlarged up to 45 times its original size.

"I knew the state would pay for Vantage if I could prove a need for it," says Greg. "Glennie Mack, our supervisor of benefits and personnel records, contacted the State's Division of Blind Services. I had to get a doctor's prescription saying I needed the machine to help me read. It took three or four months, but I got it in October.

"The state aims to make blind people equals to sighted workers on the job," Greg continues. "The rationale is, for every dollar it spends, it gets back seven dollars by having a person employed."

Another Grummanite in the plant uses Vantage on occasion: Nealey's brother, Kevin, who works in Final Buildup. They have a hereditary condition called retinal degeneration. Though also legally blind, Kevin's eyesight is much better than Greg's.

"I wear contacts to correct my vision," says Kevin. "I have no trouble reading the phone book, for example, so I can usually read an op sheet. But sometimes, the ink is too light. Vantage also comes in handy with blueprints."

A third brother also has retinal degeneration; he has had rapid loss of vision in just the past year and a half. Fortunately, Greg's and Kevin's sight has remained stable.

"With this condition, my eyesight could get worse, but I've been lucky," says Greg. "My vision's been the same since I was five years old."

Greg hopes to make a career at Grumman and is studying for a business degree. "Someday, there may be some job posted that I want to apply for, requiring a lot more paperwork than my current job," he notes. "I want to be able to show that I can handle it."

Not too long ago, Greg took another big step: he became a homeowner. "It's only a mile from the plant, so I can walk to work," he says. "I no longer have to ask anyone for a ride. You can't put a price on independence."

Personals

My family and I would like to extend our sincere appreciation to all my co-workers and many friends for their sympathy, prayers, beautiful flowers and support during the recent loss of my mother Alice. **Fred Welge**

I wish to thank all the people in Standards and other caring friends in Grumman for their calls, visits, cards and support during my recent hospital stay. Your concern is sincerely appreciated. **Bob Glowacki**

My family and I wish to extend our sincere appreciation and thanks to all of my friends at Grumman Melbourne Systems for their kind expressions of sympathy and support during the recent loss of my mother. **Kevin Murrin**

My family and I wish to extend our sincere appreciation and thanks to all of our friends for their kind expressions of sympathy and support during the recent loss of my mother. **Lou Perotti**

I wish to thank all my friends and co-workers for their prayers, cards, calls and visits during my recent illness and recuperation. God bless you. **Nick Papandreas**